

**PFO 20
MACHINE FOR DYNAMIC FATIGUE TESTS**



The machine consists of:

STRUCTURE OF THE MACHINE WITH MOBILE CROSSBAR

Consisting of a base in which the 200 kN actuator and the two columns that guide the mobile crosspiece are placed.

The mobile crosspiece can be moved with two hydraulic cylinders located on the sides of the base and lockable, in the chosen position, with 6 or more screws of suitable size or with locking bushes.

STRUCTURE DIMENSIONS

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| - Distance between the columns | 500 mm |
| - Maximum space in height excluding jaws | 750 mm |
| - Maximum space between the jaws | ≈ 400 mm |
| - Mobile crosshead travel | 400 mm |
| - Machine width | ≈ 950 mm |
| - Machine depth | ≈ 550 mm |
| - Machine height | ≈ 2000 mm |

An HBM ± 25 kN traction / compression load cell will be installed on the mobile crossbar (Relative hysteresis / Accuracy class 0.5)

+/- 20 kN ACTUATOR

Servo-controlled actuator with counter-reaction ring in displacement or load, the type of counter-reaction must be selected at the start of the test. The actuator has a simple hydrostatic support, equipped with a high response MOOG servo valve, an anti-torque unit, a transducer for stroke control (LVDT) and a filter on the pressure line with electric clogging detection



Technical characteristics of the actuator:

- Max static force ± 29 kN
- Max dynamic force ± 20 kN
- Stroke max ± 50 mm (100 mm totale)
- Maximum stroke with sine wave at 50Hz ± 0.5 mm (1 mm totale)
- Maximum frequency 50 Hz
- MOOG high response servovalve n. 1
- Operating pressure 220 bar

HYDRAULIC PLANT

Hydraulic system with the following technical characteristics:

- Tank (capacity) 400 L
- Helical gear pump n.1 x 11,4 cc (16.5 L/min)
- Engines n.1 x 7.5 Kw
- Delivery accumulator n.1 x 1 L (preload 180 bar)
- Working pressure 220 bar
- Suction filter
- Oil level sensor
- Temperature transducer
- Pressure transducer
- 2-set maximum pressure valve (high / low pressure)
- Solenoid valve for high / low flow rate selection
- Water / oil exchanger designed to guarantee continuous operation
- Flexible pipes (P and T), for hydraulic connection with machinery for a maximum length of 3000 mm, pressure pipes equipped with safety ropes
- Valve group for the movement of the crosspiece
- Valve group for locking and unlocking the jaws.

ELECTRONIC CABINET

Electronic cabinet consisting of a rack-door cabinet in which a Personal computer and the servo-control rack module are housed.

- Industrial PC (Intel Core I3 processor, OS Windows 10 Pro), LCD 19 "monitor, keyboard and mouse. The PC is equipped with a National Instruments acquisition card for PC, command and digital inputs / outputs
- Electronic servo-control module - 19 "rack amplifiers including a power supply slot 230 V ac 50 Hz an independent PID circuit slot with double feedback loop with proportional, integrative and derivative action: one for the piston stroke and one for the load signal amplification slots
- a power supply cable, servo-control-servovalve connection cables, travel and load signal inputs.

In the event of instant failure of the 230 V supply voltage ac of electronic equipment, can occur undesired movements of the piston such as to damage the particular in test. In order to avoid these effects and to ensure safety of the operator, when assembling the part being tested, it is necessary to power the electronic modules and the control PC with a power supply served by an uninterruptible power supply (consumption approximately 700 VA). The industrial UPS group is included in the supply

The static load will be limited to 25kN software.

ELECTRICAL SYSTEM

Electrical system with the following technical features:

- Wardrobe
- Main door lock switch
- Emergency module and related management contactors
- Motor protection, fuses or protection switches for motor, power supply and PC
- Power supply
- Contactors and Relays for engine and valve management
- Siemens S7 1200 PLC for high / low pressure, high / low flow, up / down management crossbar, alarm management, heat exchanger and dialogue with the PC
- Control panel on board composed machine n. 1 emergency push-button, 1 motor start button, n. 1 engine stop button, n. 1 cycle start button, n. 1 stop button cycle, n. 1 crossbar up / down selector and n. 2 selettori di bloccaggio/sbloccaggio delle ganasce

SAFETY DEVICES

- Fixed protections in aluminum and LEXAN profiles on the rear front and on the two sides
- Mobile protection in aluminum profiles and LEXAN on the front front. The mobile protection is monitored by safety limit switches or hinged safety switches



EQUIPMENT

Equipment provided:

- No. 2 jaws with hydraulic closing system on one side and manual adjustment of the mechanical locking axis on the other side.
- The maximum opening of the jaws is 40mm.
- Each jaw is equipped with 2 clamp holders and 2 round clamps from $\varnothing 5\text{mm}$ to $\varnothing 10\text{ mm}$.

